

### **What is claimed is:**

- (Claim 1)** An integrated operational ground mobility and support system comprising:
- at least one aircraft having at least one service opening on at least one side of said at least one aircraft; and
  - at least one airport interface terminal docking port having at least one ground support service sub-system, mating with said at least one aircraft at said at least one service opening, and comprising a plurality of servicing levels;
  - said at least one ground support service sub-system providing a plurality of services to said at least one aircraft through said at least one service opening and on said plurality of levels.
- (Claim 2)** A ground support system as in claim 1 further comprising a remote baggage handling system that is remotely located from and transfers baggage to and from said at least one airport interface terminal.
- (Claim 3)** A ground support system as in claim 2 wherein said remote baggage handling system scans said baggage for at least one of weapons, explosives, and unpermitted objects.
- (Claim 4)** A ground support system as in claim 1 wherein said at least one aircraft comprises a flight deck area that is isolated from said at least one service opening.
- (Claim 5)** A ground support system as in claim 4 wherein said flight deck area is elevated from a passenger compartment of said at least one aircraft.
- (Claim 6)** A ground support system as in claim 1 wherein said at least one ground support service sub-system is selected from at least one of a passenger ingress/egress system, a cargo ingress/egress system, an aircraft primary service system, an aircraft secondary service system, a security system, and a health and maintenance monitoring system.
- (Claim 7)** A ground support system as in claim 1 wherein said at least one aircraft and said at least one airport interface terminal docking port comprise a floor for passenger ingress and egress.
- (Claim 8)** A ground support system as in claim 1 wherein said at least one aircraft and said at least one airport interface terminal docking port comprise a floor for cargo ingress and egress.
- (Claim 9)** A ground support system as in claim 1 wherein said at least one aircraft comprise a first plurality of primary service couplers and said at least one airport interface terminal docking port comprise a second plurality of primary service couplers that mate with said first plurality of primary service couplers.

- (Claim 10)** A ground support system as in claim 1 wherein said at least one airport docking port comprises a cargo elevator platform.
- (Claim 11)** A ground support system as in claim 1 wherein said at least one ground support service sub-system comprises passenger transport modules.
- (Claim 12)** A ground support system as in claim 11 wherein said at least one aircraft is configured to receive said passenger transport modules.
- (Claim 13)** A ground support system as in claim 1 wherein said at least one airport interface terminal docking port is configured to shuttle at least one passenger transport module to and from said at least one aircraft.
- (Claim 14)** A ground support system as in claim 1 wherein said at least one airport interface terminal docking port is configured to shuttle at least one passenger transport module to and from a side of said at least one aircraft, and cargo to and from a nose of said at least one aircraft.
- (Claim 15)** A ground support system as in claim 1 further comprising an aircraft terminal mating system.
- (Claim 16)** A ground support system as in claim 15 wherein said aircraft terminal mating system is in the form of a machine vision technology system.
- (Claim 17)** A ground support system as in claim 15 wherein said aircraft terminal mating system comprises a docking coupler.
- (Claim 18)** A ground support system as in claim 15 wherein said aircraft terminal mating system comprises a global positioning system.
- (Claim 19)** A ground support system as in claim 15 wherein said aircraft terminal mating system comprises a precision guidance system that follows a guideline in mating the at least one aircraft to said at least one airport interface terminal docking port.
- (Claim 20)** A ground support system as in claim 1 wherein said at least one airport interface terminal docking port comprises a terminal carry-on system.
- (Claim 21)** A ground support system as in claim 20 wherein said terminal carry-on system comprises at least one carry-on transport module, said at least one airport interface terminal docking port shuttling said at least one carry-on transport module to and from said at least one aircraft.
- (Claim 22)** A ground support system as in claim 21 wherein said at least one carry-on transport module is bar-coded.
- (Claim 23)** A ground support system as in claim 1 wherein said at least one airport interface terminal docking port comprises at least one bar code reader that reads bar codes on cargo transported to and from the at least one aircraft.

**(Claim 24)** A ground support system as in claim 1 wherein said at least airport interface terminal docking port comprises at least one cargo carousel.

**(Claim 25)** A ground support system as in claim 24 wherein said at least one cargo carousel has a plurality of feed directions.

**(Claim 26)** A ground support system as in claim 1 wherein said at least one airport interface terminal docking port extends to mate with said at least one aircraft.

**(Claim 27)** A ground support system as in claim 1 wherein said plurality of service openings comprise openings selected from a nose opening, a port side opening, a starboard side opening, a terminal level opening, and a cargo level opening.

**(Claim 28)** A ground support system as in claim 1 further comprising a fuel supply and drain system comprising:

fueling ports with flow back and vapor collecting jackets supplying fuel to said at least one aircraft; and

tarmac spill traps collecting fluids proximate said fueling ports.

**(Claim 29)** A ground support system as in claim 1 further comprising a brake cooling and drain system comprising:

at least one vent coupled within a tarmac;

a fluid reservoir configured for containment below a tarmac, to couple said at least one vent, and to collect fluids proximate said at least one aircraft;

an air supply line directing air through said fluid reservoir and said at least one vent at said at least one aircraft; and

a fluid drain collecting fluids within said fluid reservoir.

**(Claim 30)** An integrated operational ground mobility and support system comprising:

at least one aircraft having at least one service opening on at least one side of said at least one aircraft; and

at least one aircraft loader/unloader having a plurality of ground support service sub-systems, mating with said at least one aircraft at said at least one opening, said plurality of ground support service sub-systems comprising at least one passenger ingress/egress system and providing a plurality of services to said at least one aircraft.

**(Claim 31)** A ground support system as in claim 30 wherein said at least one aircraft loader/unloader transports passengers and cargo to and from said at least one aircraft.

**(Claim 32)** A ground support system as in claim 30 wherein said at least one aircraft loader/unloader comprises:

a terminal level for passengers; and  
a tarmac level for cargo.

**(Claim 33)** A ground support system as in claim 30 wherein said at least one aircraft loader/unloader is mobile.

**(Claim 34)** A ground support system as in claim 30 wherein said at least one aircraft loader/unloader is in the form of a portable ground-servicing unit.

**(Claim 35)** A ground support system as in claim 34 wherein said portable ground-servicing unit comprises:

an aircraft primary service floor; and  
an aircraft secondary service floor.

**(Claim 36)** An integrated operational ground mobility and support system for an aircraft comprising:

at least one aircraft having at least one service opening on at least one side of said at least one aircraft; and

at least one airport interface terminal docking port having a plurality of ground support service sub-systems, mating with said at least one aircraft proximate said at least one service opening, said plurality of ground support service sub-systems providing a plurality of services and comprising;

a passenger ingress/egress system facilitating ingress and egress of passengers to and from said at least one aircraft;

a cargo ingress/egress system facilitating cargo transfer between said at least one aircraft and said at least one airport interface terminal docking port;

an aircraft primary system facilitating supply, removal, and refurbishment of primary fluids;

an aircraft secondary system facilitating cabin servicing of said at least one aircraft;

a security system monitoring objects entering said at least one aircraft; and

a health and maintenance monitoring system monitoring health of said at least one aircraft.

**(Claim 37)** A method of servicing an aircraft comprising:

guiding the aircraft to an airport interface terminal docking port;

providing at least one service opening on at least one side of said aircraft;

mating said airport interface terminal docking port with said at least one aircraft at said at least one opening; and

providing a plurality of services over a plurality of levels in at least one servicing bridge to said at least one aircraft.

**(Claim 38)** A method as in claim 37 further comprising opening a partition between a passenger compartment of the aircraft and said airport interface terminal docking port.

**(Claim 39)** An integrated operational ground mobility and support system comprising:

at least one aircraft having a plurality of service openings on at least one side of said at least one aircraft; and

at least one airport interface terminal docking port having at least one ground support service sub-system, mating with said at least one aircraft at and comprising a plurality of corridors and bridgeheads associated with said plurality of service openings;

said at least one ground support service sub-system providing a plurality of services to said at least one aircraft through said plurality of service openings.

**(Claim 40)** A ground support system as in claim 39 wherein said plurality of corridors comprise:

a first class corridor; and

a general class corridor.